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NOTE

Natural epizootic of the entomopathogenic fungus *Nomuraea rileyi* (Farlow) Samson infecting *Spodoptera frugiperda* (Lepidoptera: Noctuidae) in Coahuila México

Fall armyworm, *Spodoptera frugiperda* (J. E. Smith) (FAW), is a common pest in corn and other crops (Lu & Adang, 1966). It is a pest of major economic importance capable of greatly reducing crop production rates (Carnevalli & Florcovski, 1995). This insect has 5 to 6 larval instars which feed on tender leaves and stalks causing severe damage in every stage of plant development (Villa *et al.*, 2005; Wiseman *et al.*, 1966). FAW has been reported to be susceptible to more than 20 species of entomopathogenic fungi (Gardner & Fuxa, 1980; Sanchez-Peña, 2000). One of these is *Nomuraea rileyi* (Farlow) Samson, family Moniliaceae (Lezama-Gutierrez *et al.*, 2001) causing epizooties as observed in this study during August and September 2007 in non-irrigated corn plots in Buenavista, Coahuila. The experimental field is located 25°23'N, 101°00'W at an altitude of 1743 m above sea level with maximum average temperatures of 29°C and 86% relative humidity. The infected larvae were covered with a whitish fungus, later turning greenish-gray and identified as *N. rileyi* according to the morphological traits described by Ignoffo (1981). Temperature, relative humidity and rainfall measurements were obtained with the meteorological station of Universidad Autónoma Agraria Antonio Narro, located 100 m from the experimental site. FAW populations were observed within a 0.2-0.6 ha area. Samples were collected from corn leaves by finger tapping the plants recording the number of infected larvae. Putatively infested larvae were observed under the microscope to confirm *N. riley* infection.

Experimental corn plots had an average infestation of 1.2, 6.0, 4.1, 0.4 and 0.0. *N. rileyi*-infested larvae per meter in June, July, August, September and October 2007 respectively (Fig. 1). Populations of *S. frugiperda* decreased immediately after the samples taken in July; by September, the few larvae found on corn leaves infected with this entomopathogen were already dead. The larvae were fully covered with whitish hyphae (Fig. 2a and b) and a green mass of *N. rileyi* spores (Fig. 2c). Conidias as well as phialides were also observed (Fig. 2d). This research was focused on infected larvae during the growing stage of the corn plant, particularly at the corn boot formation. The largest number of dead larvae found was 6 larvae per linear meter in July. Larvae killed by *N. rileyi* were removed from the upper side of the leaves and examined at the laboratory and cultured in Petri dishes with Potato-Dextrose-Agar (PDA) and V8-Agar (V8A). Based upon the microscope observations of the characteristics of the infected larvae as well as slide observations, the fungus was identified as *N. rileyi* as reported by Barnet (1989).

Average maximum and minimum temperatures during the months of this study (June-October, 2007) was 28.2 and 13.2°C, averaging 20.65°C and a relative humidity average of 76.25% (Fig. 1). Sunlight hours

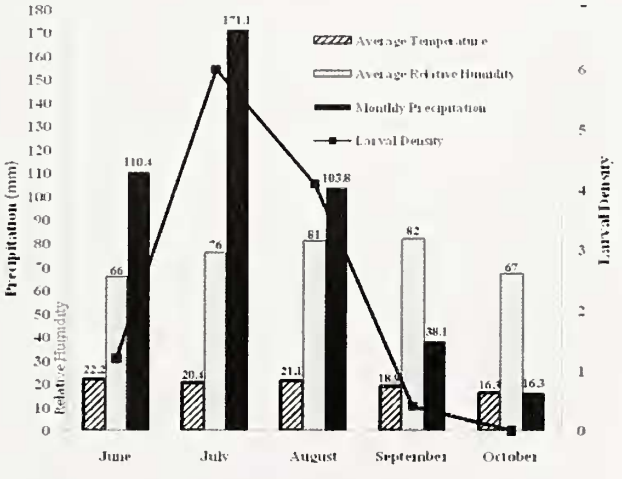

Figure 1. Natural ocurrence of *Nomuraea rileyi* on *Spodoptera frugiperda* larvae in Coahuila, Mexico in 1997, correlated with precipitation, temperature and relative humidity.

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Figure 2. *Spodoptera frugiperda* larvae covered with a) and b) whitish mycelia of hyphae, c) mass of green spores *Nomuraea rileyi* attached on corn leaves and d) fungus conidia and phialides.

were between 2.1 to 8.4 indicating mostly cloudy days. The total number of rainy days and the amount of rainfall from June to October were 41 and 439.7 mm respectively (Fig. 1). These environmental conditions favored the growth and natural infective power of the fungus, as previously reported by Vimala-Devi (1966). Infectiveness and pathogenesis of *N. rileyi* is influenced by environmental conditions, mainly humidity which is the main requirement for conidia germination and fungus survival (Ignoffo & Garcia, 1985). The temperature range was also ideal for *N. rileyi*'s thriving and consequent unleashing of the infection (18 to 25°C). Temperatures over 35°C usually inhibit the development of this entomopathogenic fungus (Edelstein *et al.*, 2005).

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